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THIS ANNOTATED BIBLIOGRAPHY IDENTIFIES A BASIC LIBRARY FOR THE PERSON DESIRING TO INTERPRET, CONDUCT, OR DIRECT RESEARCH ON EDUCATIONAL MEDIA. (MS)

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A BASIC REFERENCE SHELF ON INSTRUCTIONAL MEDIA RESEARCH

Series 1.
Using Educational Media:
Guides to the Literature

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Clearinghouse on Educational Media and Technology

Institute for Communication Research, Stanford University

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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A BASIC REFERENCE SHELF

ON INSTRUCTIONAL MEDIA RESEARCH

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The purpose of this annotated bibliography is to identify a basic library for the person who wants to interpret, conduct, or direct research on educational media. It may be useful to differentiate this "applied" or "contextual" type of research both from basic research on learning, and from surveys or studies. Basic research on learning has a relative "cleanness" and laboratory quality that is neither feasible nor desirable for the types of questions being asked in the applied context of media research. Yet, the requirements for conception, conduct, analysis and interpretation more nearly resemble those for basic research on learning than they do those usually associated with surveys and studies. The latter being characterized less by a desire for prediction or control and characterized more by description of present status. Typically, research on educational media involves technology, the complexities of research on teaching, and a variance in questions being asked that borders on chaos. Yet, the methodology (currently being employed) is sufficiently "standard" to merit a basic reference list for those desiring to become involved.

Media research requires many classifiable activities. While each of these activities has many subclassifications, an *introductory* research bibliography will not require a highly refined categorical system. It is sufficient to know (1) how to identify a significant research question, (2) what related research has been conducted on the medium in question, (3) measurement methodology, (4) research design considerations, (5) analysis of data, and (6) proposal and final report preparation.

REFERENCES RELATED TO IDENTIFYING A SIGNIFICANT RESEARCH QUESTION

1. De Cecco, John P. *Educational Technology*. New York: Holt, Rinehart and Winston (1964). 479 pp.

This collection of readings in programmed instruction is intended, in its author's words, ". . . to bring together research reports and theoretical discussion of psychologists and educators who have contributed

to the knowledge about educational technology, programmed learning, and the psychology of learning . . . ." Significant research questions are raised on all existing media.

2. Mager, Robert F. *Preparing Objectives for Programmed Instruction.* San Francisco: Fearon Publishers (1962). 62 pp.

This brief self-instructional program is recommended as a first reading for anyone interested in instructional objectives. Most readers will complete it in less than two hours, and if the author's objectives are realized, readers will be able to identify objectives stated in performance terms, to identify the portion of an objective that describes minimum acceptable performance, and to select test items appropriate to given objectives. These skills will be useful in identifying and stating a significant research question.

3. Bloom, Benjamin S. (Editor). *Taxonomy of Educational Objectives, Handbook I: Cognitive Domain.* New York: Longmans, Green and Company (1956).

This taxonomy describes six levels of cognitive instructional objectives in terms of their nature, utility, and measurement. Writers of instructional objectives will find this book to be a helpful source of examples of clearly stated objectives, and of test items appropriate to given objectives.

4. Krathwohl, David R., Bloom, Benjamin S., and Masia, Bertram B. *Taxonomy of Educational Objectives, Handbook II: Affective Domain.* New York: David McKay Co. (1964).

This handbook, modeled in format after *Handbook I: Cognitive Domain,* is divided into two main parts. Part I describes the nature of the affective domain and the classification structure prepared for it. Part II gives the classification structure in detail and describes the evaluation of affective objectives at each level of the structure. For easy reference, Appendix A provides a condensed version of the *Affective*

Domain, and Appendix B contains a condensed version of the *Cognitive Domain* from *Handbook I*.

5. Gagné, Robert M. *The Conditions of Learning*. New York: Holt, Rinehart and Winston, Inc. (1965). 308 pp.

In this book, Gagné distinguishes eight types of learning and outlines the conditions for the learning of each of these types. In specifying the conditions of learning, Gagné lists the conditions within the learner (e.g., prerequisite skills required), as well as conditions in the learning situation (e.g., those informing the learner about the form of the performance to be expected when learning is completed). Topics covered include: learning and the content of instruction, motivation, learning decisions in education, and resources for learning. Of particular value for individuals who are attempting to identify significant research questions is the chapter on resources for learning. Modes of instruction, such as tutoring sessions, lectures, and recitation, are discussed in addition to media for instruction.

6. Hilgard, Ernest R. *Theories of Learning*. Second Edition. New York: Appleton-Century-Crofts (1956).

An attempt to provide an understanding of each of the major learning theories in relation to experiments to which each theory gives rise. The book is organized largely around psychologists who gave currency to those theories most widely known in educational literature. The later chapters deal with more current developments such as the emergence of mathematical models.

7. Trow, William C. *Teacher and Technology: New Design for Learning*. New York: Appleton-Century-Crofts (1963).

Dr. Trow reviews the historical development of instructional media as a background to the presentation of new concepts in teaching technology. His main concern is with ". . . the relation between the means available for instruction and their effectiveness in the different kinds of learning experiences that are provided."

8. Loughary, John W. *Man-Machine Systems in Education.* New York: Harper and Row (1966). 242 pp.

This book deals with ". . . the nature and application of computers, media technology, and systems technology as they pertain to the instructional, administrative, pupil personnel services, and preparation of staffs for educational institutions . . . ."

9. Lange, Phil C. (Editor). *Programmed Instruction.* NSSE, 66th Yearbook, Part II. Chicago: University of Chicago Press (1967).

A discussion of principles and theories of programmed instruction and other artistic, scientific, and innovative strategies. The advantages and limitations of alternative lines of action are set forth in a way that will serve to identify needed research.

COMPLETED RESEARCH ON EDUCATIONAL MEDIA

Programmed Instruction

10. Glaser, Robert (Editor). *Teaching Machines and Programed Learning II.* Washington, D. C.: National Education Association (1965). 831 pp.

A collection of key papers leading to the development of programmed learning and, in addition, supplying the reader with an integration of current "less comprehensive reports." The result is a handbook of source material on programmed instruction -- much wider in scope and depth than Volume I which merely collected original papers for presentation in one source. [See also Harrison, 19.]

Instructional Films

11. Hoban, Charles, F., Jr., and van Ormer, Edward B. *Instructional Film Research 1918-1950.* NAVEXOS P-977 (Technical Report No. SDC 269-7-19). Port Washington, L.I., New York: Special Devices Center (1950).

This is the first of a series of technical reports on films prepared by the Instructional Film Research Program at Pennsylvania State College under joint sponsorship with the Departments of the Army and Navy. The purpose of the report is to bring together in one place the results of many widely scattered investigations made over a period of thirty years in the area of training through motion pictures. The authors of the report add their own interpretations to the research reviews and provide a tentative statement of principles of film influence. The report is organized to emphasize four factors, namely: (1) the end-purpose, or objective, for which the film is produced or used; (2) the characteristics of the audience; (3) the content and structure of the film itself; and (4) the context in which the film is presented to the audience.

12. Carpenter, C. R. (Program Director). *Instructional Film Research Reports*. Volume I. NAVEXOS P-1220 (Technical Report No. SDC 269-7-36). Port Washington, L. I., New York: Special Devices Center (January, 1953).

This compilation of research reports was prepared at Pennsylvania State College with joint sponsorship by the Departments of the Army and Navy. The research was conducted in order to discover how to promote the use of films and to increase their effectiveness as an instructional device. The volume is divided into seven sections: I. Theory and Practice; II. Film Research Tools; III. Motor Skill Training; IV. Film Utilization; V. Attitudes and Emotions; VI. Film Production; and VII. List of Reports.

13. Carpenter, C. R. (Program Director). *Instructional Film Research Reports*. Volume II. NAVEXOS P-1543 (Technical Report No. SDC 269-7-61). Port Washington, L. I., New York: Special Devices Center (June, 1956).

This volume is an extension of the previous compilation, bringing it up-to-date (1956). The plan of this volume is identical to the one previous with the exception of the addition of Technical Appendices providing outlines of forms used and statistical tables. [See also Reid and MacLennan, 20.]

Television

14. Institute for Communication Research. *Educational Television, The Next Ten Years*. Stanford University (1962). 375 pp.

This is the report of a study commissioned by the Educational Media Branch of the United States Office of Education. It takes a broad look at completed research and the future of educational television. The chapter by Schramm summarizes hundreds of studies on television and lists 99 references to practically everything published on television through 1960. [See also Reid and MacLennan, 20.]

Research Summaries Covering More than One Medium

15. *AV Communication Review* published quarterly by the Department of Audio-visual Instruction, National Education Association, Washington, D. C., lists current research studies and is probably the best single source to keep abreast of current developments in "newer" media.

16. Briggs, L. J., Campeau, P. L., Gagné, R. M., and May, M. A. *Instructional Media: A Procedure for the Design of Multi-Media Instruction, A Critical Review of Research, and Suggestions for Future Research.* Pittsburgh, Pa.: American Institute for Research (1967). 176 pp.

The rather lengthy title of this book summarizes well its contents. Briggs presents a procedure for choosing media for instruction, and includes many examples and illustrations of the application of the procedure. The selective review of literature on audio-visual media of instruction includes pertinent and concise information on television, motion pictures, programmed instruction, and other media. Several suggestions are presented for future research in educational media. The book will be useful for researchers who wish an overview of the media field, complete with ideas for research.

17. Gage, N. L. (Editor). *Handbook of Research on Teaching.* Chicago: Rand McNally (1963).

Written with the graduate or advanced undergraduate student in mind, this handbook is very complete in its discussions of the conceptual methodological equipment used in research on teaching. It summarizes, critically analyzes, and integrates many studies completed on instruction and the media of instruction.

18. Glaser, Robert (Editor). *Training Research and Education.* New York: John Wiley and Sons, Science Editions (1965).

An examination of training research completed by experimental psychologists with the intent of considering its implications for education in general. The chapters were prepared by experts in various areas of training; the editor has provided a separate chapter integrating the materials.

19. Harrison, J. A. (Editor). *European Research in Audio-Visual Aids. Part II: Abstracts.* London and Strasbourg: National Committee for Audio-Visual Aids in Education, on behalf of the Council of Europe (1966).

The most extensive summary of European research in this field -- 230 abstracts of studies conducted between 1945 and 1963. The studies cover film, television, radio, teaching machines, recordings, museums, still projected media, non-projected media, and perception.

20. Reid, J. Christopher, and MacLennan, Donald W. *Research in Instructional Television and Film.* With an introduction by Leslie P. Greenhill. Washington, D. C.: U.S. Office of Education (1967).

This highly useful volume contains 333 abstracts of research studies selected from the literature that appeared between the Hoban and van Ormer summary in 1950 and the end of 1963. The abstracts are detailed, and the book has an extensive topical index.

MEASUREMENT METHODOLOGY

21. Lindquist, E. F. (Editor). *Educational Measurement.* Washington, D. C.: American Council on Education (1950).

Though nearly 20 years old, this volume remains as the best overall treatment of the subject. Its central focus is on the measurement of educational achievement. Some of the content is dated, for example, the chapters on reliability and validity, but on the whole it is still "up-to-date." The book is divided into three major sections: (1) The Functions of Measurement in Education, (2) The Construction of Achievement Tests, and (3) Measurement Theory. In combination they provide a conceptual framework for understanding educational measurement and practical help in its pursuit.

22. Edwards, Allen L. *Techniques of Attitude Scale Construction.* New York: Appleton-Century-Crofts (1957).

Concerned with techniques for constructing attitude scales, this book discusses methods that make use of judgments only, responses only, and combinations of judgments and responses. It is not an exhaustive treatise of psychological scaling methods, but is intended for those who may desire to measure attitudes toward something in which they are interested although they do not find a scale available. Examples are provided.

23. Buros, Oscar Krisen (Editor). *The Sixth Mental Measurement Yearbook.* Highland Park, N. J.: The Gryphon Press (1965).

The latest in a series extending back to 1933, this review of psychological tests provides frank, critical comments. The yearbook is familiarly known as the "tester's bible" and is an indispensable source of information on what tests are available and what can be expected of their use.

RESEARCH DESIGN CONSIDERATIONS

24. Campbell, Donald T., and Stanley, Julian C. "Experimental and Quasi-Experimental Designs for Research" from Gage, N. (Editor). *Handbook of Research on Teaching*. Chicago: Rand McNally (1963).

The chapter is a perfect example of how clarity can be enhanced by ingenious organization. The gradual development of design from simple to complex, accompanied by the explication of the related sources of invalidity, is possibly as clear as the complex subject can be exposited. The highlight of the chapter is the inclusion of three related charts which allow any prospective researcher to determine in a glance the inherent difficulties in his plan. The chapter requires only minimal skills and some amount of patience to complete the 75 pages. Very few readers need pursue the topic further.

ANALYSIS OF DATA

25. Siegel, S. *Nonparametric Statistics for the Behavioral Sciences*. New York: McGraw-Hill (1956).

This is the most comprehensive collection of nonparametric statistical tools available for behavioral science researchers. Procedures are well described and presented with excellent examples.

26. Wert, J. E., Neidt, C. O., and Ahmann, J. S. *Statistical Methods in Educational and Psychological Research*. New York: Appleton-Century-Crofts (1954).

This text is one of the best expositories of commonly used parametric statistical treatments. Although it is of the "cookbook" variety and somewhat weak in presentation of some rationale, its lack of rigor and clarity of symbols is wellsuited for the nonmathematically oriented researcher. A major strength of the book is its coverage of several powerful techniques commonly omitted from other texts.

PROPOSAL AND REPORT WRITING

27. Culbertson, J. A., and Heneley, S. P. (Editors). *Educational Research: New Perspectives.* Danville, Ill.: Interstate (1963).

Twenty-two chapters, each written by different specialists, covering the areas of Environment, Concepts, Methods, and Training as they relate to educational research. The chapter by Guba, "Guidelines for the Writing of Proposals," and the chapter by Smith, "Critique of Proposals. . . .", are directly relevant to the tasks of proposal and report writing.

28. Good, C. V. *Introduction to Educational Research.* New York: Appleton-Century-Crofts (1963).

A useful general reference for the beginning researcher. The sections on the development of research problems and guides to research literature are useful in proposal and report writing.